National Institute of Environmental Health Sciences

Oceans and Human Health (OHH): A European perspective from the Marine Board of the European Science Foundation (Marine Board-ESF)

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Abstract:

The oceans and coastal seas provide mankind with many benefits including food for around a third of the global population, the air that we breathe and our climate system which enables habitation of much of the planet. However, the converse is that generation of natural events (such as hurricanes, severe storms and tsunamis) can have devastating impacts on coastal populations, while pollution of the seas by pathogens and toxic waste can cause illness and death in humans and animals. Harmful effects from biogenic toxins produced by algal blooms (HABs) and from the pathogens associated with microbial pollution are also a health hazard in seafood and from direct contact with water. The overall global burden of human disease caused by sewage pollution of coastal waters has been estimated at 4 million lost person-years annually. Finally, the impacts of all of these issues will be exacerbated by climate change. A holistic systems approach is needed. It must consider whole ecosystems, and their sustainability, such as integrated coastal zone management, is necessary to address the highly interconnected scientific challenges of increased human population pressure, pollution and over-exploitation of food (and other) resources as drivers of adverse ecological, social and economic impacts. There is also an urgent and critical requirement for effective and integrated public health solutions to be developed through the formulation of politically and environmentally meaningful policies. The research community required to address "Oceans & Human Health" in Europe is currently very fragmented, and recognition by policy makers of some of the problems, outlined in the list of challenges above, is limited. Nevertheless, relevant key policy issues for governments worldwide include the reduction of the burden of disease (including the early detection of emerging pathogens and other threats) and improving the quality of the global environment. Failure to effectively address these issues will impact adversely on efforts to alleviate poverty, sustain the availability of environmental goods and services and improve health and social and economic stability; and thus, will impinge on many policy decisions, both nationally and internationally. Knowledge exchange (KE) will be a key element of any ensuing research. KE will facilitate the integration of biological, medical, epidemiological, social and economic disciplines, as well as the emergence of synergies between seemingly unconnected areas of science and socio-economic issues, and will help to leverage knowledge transfer across the European Union (EU) and beyond. An integrated interdisciplinary systems approach is an effective way to bring together the appropriate groups of scientists, social scientists, economists, industry and other stakeholders with the policy formulators in order to address the complexities of interfacial problems in the area of environment and human health. The Marine Board of the European Science Foundation Working Group on "Oceans and Human Health" has been charged with developing a position paper on this topic with a view to identifying the scientific, social and economic challenges and making recommendations to the

EU on policy-relevant research and development activities in this arena. This paper includes the background to health-related issues linked to the coastal environment and highlights the main arguments for an ecosystem-based whole systems approach.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Public

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Quality

Extreme Weather Event: Hurricanes/Cyclones

Food/Water Quality: Biotoxin/Algal Bloom, Chemical, Pathogen

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Marine Toxin Syndrome

Medical Community Engagement: ☑

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Mitigation

Other Projection Model/Methodology: Discussion only

Population of Concern: A focus of content

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified